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Prevalence of Forced Sex and Associated Factors among Women and Men in Kisumu, Kenya

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Abstract

Sexual violence is a well-recognized global health problem, albeit with limited population-based data available from sub-Saharan Africa. We sought to measure the prevalence of forced sex in Kisumu, Kenya, and identify its associated factors. The data were drawn from a population-based cross-sectional survey. A two-stage sampling design was used: 40 clusters within Kisumu municipality were enumerated and households within each cluster selected by systematic random sampling. Demographic and sexual histories, including questions on forced sex, were collected privately using a structured questionnaire. The prevalence of forced sex was 13% (women) and 4.5% (men). After adjusting for age and cluster, forced sex among women was associated with transactional sex (OR 2.33; 95%CI 1.38-3.95), having more than two lifetime partners (OR 1.9; 95%CI 1.20-3.30), having post-primary education (OR 1.49; 95%CI 1.04-2.14) and a high economic status (OR 1.87; 95%CI 1.2-2.9). No factors were significantly associated with forced sex among the male respondents. Intimate partners were the most common perpetrators of forced sex among both women (50%) and men (62.1%). Forced sex prevention programs need to target the identified associated factors, and educate the public on the high rate of forced sex perpetrated by intimate partners (*Afr J Reprod Health 2011; 15[4]: 87-97).*

Résumé

Prévalence du sexe forcé et facteurs qui y sont liés chez les femmes et les hommes à Kisumu, Kenya. La violence sexuelle est un problème de santé qui est bien reconnu partout dans le monde, bien que les données basées sur la population et disponible de l'Afrique subsaharienne soient limitées. Nous avons cherché à mesurer la prévalence du sexe forcé à Kisumu, Kenya et à identifier ses facteurs associés. Nous avons recueilli les données à partir d'une enquête transversale basée sur la population. Nous nous sommes servis d'un modèle d'échantillon à deux étapes : Nous avons énuméré 40 petits groupes au sein de la municipalité de Kisumu et les ménages au sein de chaque groupe choisi au hasard à partir d'un échantillon systématique. Des histoires démographiques et sexuelles y compris des questions sur le sexe forcé, ont été recueillies en privé à l'aide d'un questionnaire structuré. La prévalence du sexe forcé était 13%(femmes) et 4,5% (hommes). Après avoir ajusté selon l'âge et le groupe, le sexe forcé chez les femmes a été lié au sexe transactionnel (OR2,33 ; 95%CI 1,38-3,95% CI 1,20-3,30), ayant plus de deux partenaires de toute une vie(OR 1,9 ; 95% CI 1,20-3,30), ayant reçu une éducation post primaire (OR 1,49 ; 95%CI 1,04-214) et une haute situation économique (OR1, 87 ; 95%CI 1,2-2,9). Il n'y avait pas de facteur qui a été significativement lié au sexe forcé chez les interviewés mâles. Des partenaires intimes étaient les auteurs les plus communs du sexe forcé parmi les femmes (50%) et les hommes (62,1%). Les programmes destinés à la prévention du sexe forcé doivent viser les facteurs qui y sont liés et qui ont été identifiés et il faut sensibiliser le public à l'égard du taux élevé du sexe forcé qui est perpétré par des partenaires intimes (*Afr J Reprod Health 2011; 15[4]: 87-97).*

Keywords: Forced sex, Intimate partner violence, Sexual violence, Kenya

Introduction

Sexual violence is a global public health problem [1]. Similar prevalences of forced sex by intimate partners are reported in various parts of the world, in North London, England (23%), Guadalajara, Mexico (23%), Lima, Peru (22.5%) and the Midlands Province in Zimbabwe (25%) [1]. Rape has been well studied in South Africa, where a particularly high rate of 194 per

100,000 female population has been reported [2]. In Ghana, 25% of females in a recent study reported that their first sexual intercourse had been forced [3]. In Rwanda, 33% of women indicated that they had experienced sexual coercion [4] and in Tanzania, nearly half of the girls attending primary and secondary schools in Mwanza reported having experienced forced sex at some point in their lifetime [5]. Sexual violence against boys and men though significant, has been less well studied and limited data are available. In developing countries, the proportion of men who report a history of sexual abuse ranges from 3.6% in Namibia and 13.4% in Tanzania to 20% in Peru. It is believed that these figures underestimate the true prevalence of male sexual assault [1].

Quantitative data on forced sex in Kenya are limited. One early survey conducted in 1993 among girls in secondary schools in Kenya, revealed that 24% had been forced into their first sexual encounter [6]. In 2001 a survey among young people aged 10-24 in Nyeri, Kenya, revealed that more than one in five sexually-experienced young women and one in ten sexually-experienced young men had had non-consensual sex, and the perpetrators were often the young people's intimate partners [7]. These limited data cannot be generalized to the overall population.

Sexual violence is associated with an increased risk of a range of sexual and reproductive health problems, with immediate and long-term consequences. It also has a profound impact on mental health [1 8]. Physical consequences include but are not limited to undesired pregnancy, vaginal bleeding, sexually transmitted infections (STI) including HIV, decreased sexual desire, pain during intercourse, chronic pelvic pain and urinary tract infections. In addition, victims of sexual violence are more likely to engage in risky sexual behavior, such as engaging in unprotected sex, having multiple partners, participating in sex work [9], and substance abuse, all of which increase the risk of HIV and other STI acquisition [10]. The role of forced sex in transmission of HIV infection and other STIs is undoubtedly significant and it emphasizes the need to address broader issues surrounding forced sex in order to attain success in prevention of HIV and STI transmission in vulnerable populations.

To date, there have been no population-based studies documenting the burden of forced sex among both women and men in Kisumu, the third largest city in Kenya, with an HIV prevalence of 10.8% in 2006 according to the National AIDS Control Council (NACC). It is in this context that we studied the prevalence of forced sex and factors associated with forced sex in the general adult population in Kisumu, Kenya.

Methods

Data for this study were drawn from a large population-based cross-sectional study assessing knowledge, attitudes and beliefs concerning antiretroviral therapy (ART), the impact of ART on self-reported sexual risk behaviors, and the prevalence of HIV and the prevalence of other STIs. A multi-stage sampling design was used in which 40 clusters within Kisumu municipality were enumerated and households within each cluster were selected by systematic random sampling. All men and women aged 15-49 years who slept in the house the night before were eligible for inclusion. Between July and October 2006, 1050 households were visited, of which 864 (82.3%) had eligible participants. Of the 2794 eligible participants in the households, 1833 (65.6%) were contacted and asked to enroll; 1655 people (90% of those contacted) consented including 749 men and 906 women.

We used a pre-tested structured questionnaire translated to the local languages and administered through face-to-face interviews by well-trained study staff. Our outcome measure was forced sex, as by the measured response to the question: "Have you ever been forced to have sex against your will?" As recommended by the WHO guidelines [1], this question was asked with the respondent alone. As far as was possible, gender-matched interviews were carried out in a private area to facilitate disclosure. Sex was defined to the respondent as that involving the penis being inserted into the vagina. Participants had the option of responding either 'yes', 'no' or 'not sure', or opting not to answer the question altogether. The questionnaire also collected social and demographic factors (age, education, employment status, place of birth, marital status) and economic status as assessed by ownership of household goods (television and radio) and electricity in the house. Current alcohol use, substance abuse, number of lifetime partners, concurrent sexual partnerships, and condom use measured risky sexual behavior. Information on past treatment for STIs and knowledge of partner treatment for STIs was also obtained. Screening for the following STIs was conducted among participants who gave consent: *Trichomonas vaginalis* based on culture of a self-collected vaginal swab *(*InPouch TV; Biomed Diagnostics, San Jose, CA, USA*)*; HIV using two parallel rapid assays Rapid Uni-Gold™ (Trinity Biotech, Ireland) and Determine™ (Inverness Medical Innovations, Delaware, USA) with HIV ELISA

(Vironostika HIV Uni-Form II Ag/Ab) for resolving discrepancies between the first assays; and Herpes Simplex Virus II based on serological assays based on an ELISA (Kalon HSV-2 IgG test, Kalon Ltd, City, Country).

Statistical Analysis

Factors associated with forced sex for women are well studied and defined in other populations; however risk factors for sexual violence among men are not so well defined. In addition, there are numerous existing gender disparities within the Kenyan population that are potential confounders for forced sex. Therefore, all analyses and corresponding results were stratified by gender.

All procedures used in the data analysis took into account the possibility of intra-class correlation within the clusters. The Huber and White robust sandwich variance estimator for cluster-correlated data [11 12] was applied to all the analyses using Stata Statistical Software Release 10 (StataCorp, College Station, Texas, USA).

Previous studies show that young age is a risk factor for sexual violence [13]; however, it is also a potential confounder for a number of associations. Thus, descriptive analyses were carried out adjusting for age in five year categories. All potential explanatory variables were summarized by whether or not the participant reported forced sex. Continuous variables were summarized by calculating means with 95% confidence intervals, while binary and categorical variables were summarized by odds ratios (ORs) and 95% confidence intervals (CI).

To investigate potential risk factors associated with forced sex, we used the following procedure: initially, the variables were divided into five blocks (socio-demographic, economic status, sexual history, STI history and current STI status) with each containing conceptually related variables. Multiple logistic regression analysis was applied to each block with forced sex as the primary outcome and age was included in each model. To avoid multi-collinearity, which would give unreliable coefficient estimates with high standard errors, variables were selected from each block and modeled. Variables with p-values of less than 0.1 were obtained from each of the block models and used to fit an overall model. Wald tests were applied to determine the exclusion of non-significant variables in the overall model so as to achieve a final parsimonious model.

Results

Women

Of the 794 (88%) women who reported ever having had sex, 106 (13%) reported a positive history of forced sex. Table 1 summarizes the associations of descriptive characteristics of the female study participants with forced sex, after adjusting for age and cluster. Women with a history of forced sex were more likely to have more years of education, use electricity in their home and have a history of illicit drug use, but not a history of alcohol use. Other sociodemographic factors such as age, employment status, ethnicity, marital status and place of birth were similar in the two groups. Women who had experienced forced sex had significantly higher odds of having had two or more sexual partners in their lifetime, and having ever exchanged sex for gifts as compared to women with no history of forced sex. A higher prevalence of lifetime condom use was reported among women who had experienced forced sex even though these same women were less likely to report condom use with their current partner and women whose partners had been treated for STIs in the past 12 months were more likely to report a history of forced sex. Age at sexual debut, history of anal sex, current genital-ulcer symptomatology, trichomonas infection and HSV-2 serostatus were not found to have statistically significant associations with a history of forced sex. However, HIV prevalence varied significantly between the two groups, with HIV seropositive women having a lower odds (OR 0.6, 95% CI 0.37 – 0.99) of reporting forced sex compared to HIV seronegative women.

Table 2 depicts the multivariate models. In the sociodemographic model which included drug use and alcohol intake, education level and history of drug use were the only factors found to have a significant association with forced sex. Adjusting for the place of birth and ownership of a television and radio ownership within the economic status model, women with electricity in their houses had a 1.8-fold increased odds of forced sex than women without electricity. The strength of this association increased after controlling for the other economic factors. In the sexual history model, as previously observed in the descriptive analysis, transactional sex and the number of sexual partners were both significantly associated with a history of forced sex, after adjusting for age at sexual debut, condom use and anal sex in the model. Although a history of STI treatment was not found to be independently associated with forced sex, after adjusting for partner treatment and genital-ulcer symptoms women previously treated for an STI were

Table 1: Women participating in the ART impact cross-sectional study, in Kisumu, Kenya, stratified by forced sex (n=794)[a]

			Adjusted OR[b]	
	Forced sex	**No Forced Sex**	**OR, 95% Confidence level**	
	n=106	**n=688**	**OR**	**(Lower, Upper)**
Mean age (yrs)	27.2	26.3	n/a	n/a
Age < 18 years	7	47	0.96	0.45 2.05
Age < 25 years	57	366	1.02	0.70 1.49
Ever attended school	103 (95.6%)	658 (97.2%)	1.71	0.56 5.16
Number of school years, mean (n=771)	4.92	5.40	n/a	n/a
Post primary (> Primary level) (n=761)	48 (46.6%)	238 (36.2%)	1.57	1.09 2.26
Currently employed	43 (40.6%)	261 (37.9%)	1.07	0.78 1.47
Luo	82 (77.4%)	524 (76.2%)	1.07	0.60 1.93
Ever been married	80 (75.5%)	532 (77.3%)	0.81	0.53 1.22
Current marital status (n=613)	59 (73.8%)	437 (82.0%)	0.65	0.39 1.08
Married > 7yrs (n=128)	8 (36.4%)	45 (42.5%)	0.92	0.21 4.02
Electricity in house	40 (37.7%)	175 (25.4%)	1.78	1.17 2.71
Radio in house	92 (86.8%)	584 (84.9%)	1.19	0.58 2.42
Television in house	46 (43.4%)	245 (35.6%)	1.38	0.85 2.25
Urban place of birth (n= 770)	53 (53.0%)	396 (59.1%)	0.74	0.47 1.18
Taken alcohol in last 4 weeks	19 (17.9%)	86 (12.5%)	1.50	0.80 2.82
Ever used drugs	20 (18.9%)	67 (9.7%)	2.15	1.15 4.03
< 16 yrs at first intercourse (n=780)	51 (48.1%)	294 (43.6%)	0.83	0.51 1.37
Lifetime partners (mean, n=778)	4.89	3.26	n/a	n/a
Partners in lifetime ≥ 3 (n=778)	73 (69.5%)	362 (53.8%)	1.94	1.23 3.07
Sex with non spousal partner in last 12 m	22 (22.5%)	120 (18.4%)	1.29	0.70 2.38
Number of sex partners in last 12 m (mean, n=791)	0.21	0.07	n/a	n/a
Ever used a condom	66 (62.3%)	351 (51.0%)	1.70	1.06 2.70
Ever used a condom with current partner (n=122)	10 (50.0%)	77 (75.5%)	0.34	0.15 0.76
Anal sex (n=780)	3 (2.9%)	13 (1.9%)	1.54	0.43 5.60
Ever exchanged sex for gifts (n=787)	31 (29.5%)	111 (16.3%)	2.21	1.30 3.74
Ever exchanged sex for gifts in last 12 m (n=143)	15 (48.4%)	40 (35.7%)	1.67	0.76 3.69
Ever treated for STI (n=789)	22 (21.0%)	90 (13.2%)	1.72	0.97 3.04
Last 12m treated for STI (n=112)	6 (27.3%)	24 (26.7%)	1.10	0.41 2.93
Last 12m partner treated for STI (n=599)	9 (12.7%)	25 (4.7%)	2.98	1.05 8.47
Current genital ulcers/sores (n=767)	11 (10.7%)	43 (6.5%)	1.71	0.86 3.42
Trichomonas positive (n=708)	12 (13.0%)	102 (16.6%)	0.77	0.38 1.53
HSV-II positive (n=735)	70 (70.0%)	435 (68.5%)	1.05	0.66 1.67
HIV positive (n=738)	19 (19.0%)	174 (27.3%)	0.60	0.37 0.99

[a] *n= 794 unless otherwise indicated; sample size less than 794 indicates missing values*

[b] *Adjustment for within cluster dependence was done using the Huber and White sandwich estimator of variance (the robust estimate of variance) and adjusted for age by category (15-19, 20-24, 25-29, 30-34, 35-39, 40-45)*

Table 2: Factors associated with forced sex among women taking part in the ART impact study in Kisumu, Kenya (multiple logistic regression)

Models[a]	OR	95% CI
Model 1: Socio-demographic factors (n=761)		
Post primary education (> primary vs. ≤ primary)	1.57	1.09, 2.28
Currently employed (yes vs. no)	0.91	0.66, 1.26
Ever been married (yes vs. no)	0.9	0.57, 1.44
Luo	1.08	0.59, 1.99
History of drug use	2.04	1.02, 4.10
Taken alcohol in last 4 weeks	1.29	0.63, 2.67
Model 2: Economic status factors (n=791)		
Electricity	1.81	1.17, 2.82
Television	0.96	0.56, 1.65
Radio	1.04	0.51, 2.13
Place of birth (urban vs. rural)	0.74	0.47, 1.18
Model 3: Sexual history factors (n=756)		
Age at first intercourse (< 16 vs. ≥ 16	1.18	0.72, 1.94
Ever used condom (yes vs. no)	1.48	0.87, 2.54
Anal sex	1.37	0.37, 5.14
Exchanged sex for gifts (yes vs. no)	1.81	1.04, 3.17
Number of lifetime sex partners (> 2 vs. ≤ 2)	1.6	1.03, 2.48
Model 4: STI history factors (n=585))		
Ever treated for STI (yes vs. no)	2.29	1.13, 4.63
Partner treated for STI in past 12 m (yes vs. no)	2.18	0.65, 7.28
Genital ulcers or sores	1.48	0.59, 3.76
Model 5: Current STI factors (n=705)		
HSV-2 (positive vs. negative)	1.15	0.71, 1.89
Trichomonas vaginalis (positive vs. negative)	0.80	0.39, 1.63
HIV (positive vs. negative)	0.66	0.41, 1.06
Model 6: Overall (n=686)		
Post primary education (>primary vs. < primary)	1.52	1.06, 2.17
History of drug use	1.67	0.80, 3.51
Electricity	1.79	1.13, 2.83
Exchanged sex for gifts (yes vs. no)	2.14	1.25, 3.67
Number of lifetime sex partners (> 2 vs. ≤ 2)	1.76	1.10, 2.82
Ever treated for STI (yes vs. no)	1.35	0.75, 2.44
HIV (positive vs. negative)	0.61	0.38, 1.00
Model 7: Final (n=691)		
Post primary education (> primary vs. < primary)	1.49	1.04, 2.14
Electricity	1.87	1.20, 2.90
Exchanged sex for gifts (yes vs. no)	2.33	1.38, 3.95
Number of lifetime sex partners (> 2 vs. ≤ 2)	1.9	1.20, 3.03
HIV (positive vs. negative)	0.61	0.37, 1.01

[a] *All models include age adjustment by 5 year categories*

Table 3: Men participating in the ART impact cross-sectional study, in Kisumu, Kenya, stratified by forced sex (n=648)[a]

			Adjusted OR[b]	
	Forced sex	**No Forced Sex**	**OR, 95% Confidence Interval**	
	n=29	**n = 619**	**OR**	**Lower, Upper**
Mean age (years)	25.31	26.68	n/a	n/a
Age < 18 years	6 (20.7%)	40 (6.5%)	3.78	1.46 9.77
Age < 25 years	17 (58.6%)	308 (49.8%)	1.43	0.66 3.08
Ever attended school	29 (100%)	615 (99.4%)	n/a	n/a
Number of school years, mean (n=616)	4.97	4.95	n/a	n/a
Post secondary education (> Secondary level) (n=644)	8 (27.6%)	64 (10.4%)	3.35	1.48 7.58
Currently employed	12 (41.4%)	341 (55.1%)	0.60	0.30 1.21
Luo	26 (89.7%)	483 (78.0%)	2.36	0.73 7.68
Ever been married	10 (34.5%)	317 (51.2%)	0.39	0.14 1.05
Current marital status (n=328)	8 (80.0%)	278 (87.4%)	0.56	0.12 2.62
Electricity in house	10 (34.5%)	153 (24.7%)	1.60	0.72 3.58
Radio in house	26 (89.7%)	534 (86.3%)	1.39	0.41 4.78
Television in house	9 (31.0%)	210 (33.9%)	0.88	0.33 2.35
Urban place of birth(n= 644)	18 (64.3%)	384 (62.3%)	1.08	0.53 2.19
Taken alcohol in last 4 weeks	14 (48.3%)	289 (46.7%)	1.11	0.62 2.00
Ever used drugs	14 (48.3%)	276 (44.6%)	1.18	0.58 2.41
<16 yrs at first intercourse (n=636)	17 (58.6%)	328 (54.0%)	0.78	0.34 1.79
Lifetime partners (mean, n=637)	6.93	7.90	n/a	n/a
Lifetime partners > 2 (n=637)	25 (86.2%)	480 (79.0%)	1.89	0.63 5.62
Sex with non spousal partner in last 12m (n=620)	10 (37.0%)	208 (35.1%)	1.05	0.44 2.48
Ever used a condom	17 (58.6%)	428 (69.1%)	0.61	0.28 1.32
Anal sex (n=643)	0 (0.0%)	21 (3.4%)	n/a	n/a
Ever exchanged sex for gifts (n=647)	14 (48.3%)	164 (26.5%)	2.56	1.04 6.29
Ever exchanged sex for gifts in last 12m (n=174)	4 (28.6%)	88 (55.0%)	0.28	0.081 1.00
Ever treated for STI (n=645)	10 (34.5%)	175 (28.4%)	1.51	0.80 2.87
Last 12 m treated for STI (n=186)	3 (30.0%)	37 (21.0%)	1.96	0.62 6.15
Last 12 m partner treated for STI (n=497)	3 (15.8%)	29 (6.1%)	2.94	0.77 11.23
Current genital ulcers/sores (n=767)	1 (3.6%)	48 (7.9%)	0.43	0.07 2.77
Present dysuria (n=641)	2 (6.9%)	42 (6.9%)	1.02	0.25 4.13
Urethral discharge in past 12 m (n=632)	2 (7.7%)	26 (4.3%)	1.78	0.40 7.99
HSV-II postive (n=594)	9 (36.0%)	234 (41.1%)	0.86	0.34 2.19
HIV positive (n=596)	4 (15.4%)	103 (18.1%)	0.88	0.25 3.04

[a] *Adjustment for within cluster dependence was done using the Huber and White sandwich estimator of variance (the robust estimate of variance)*

[b] *Adjusted for age category (15-19, 20-24, 25-29, 30-34, 35-39, 40-45)*

2.3 times more likely to report forced sex than women with no history of STI treatment. However, in the current STI model, none of the current infections, including HIV status was significantly associated with forced sex.

In the overall model, a history of illicit drug use and prior STI treatment had insignificant coefficients and were dropped to produce the final model. Based on this final model, women with a history of forced sex had: a higher level of education and economic status, more often had engaged in transactional sex, and had more than two sexual partners in their lifetime. Current HIV status was not influenced by a history of forced sex after adjusting for confounding variables.

Men

Of the 648 (87%) men who reported ever having had sex, 29 (4.5%) reported a positive history of forced sex. In the descriptive analysis, the association of each of the explanatory variables with history of forced sex was assessed, and few variables were found to be significantly associated with forced sex (Table 3). This was expected due to the small proportion of men with a

Table 4: Factors associated with forced sex among men taking part in the ART impact study in Kisumu, Kenya (multiple logistic regression)

Models[a]	OR	95% CI
Model 1: Socio-demographic factors (n=644)		
Post secondary education (> secondary vs. ≤ secondary)	3.07	1.37, 7.05
Currently employed (yes vs. no)	0.72	0.34, 1.51
Ever been married (yes vs. no)	0.53	0.20, 1.42
Luo	2.27	0.69, 7.54
History of drug use	1.08	0.48, 2.44
Taken alcohol in last 4 weeks	1.04	0.54, 1.99
Model 2: Economic status factors (n=644)		
Electricity	2.55	1.03, 6.33
Television	0.45	0.14, 1.47
Radio	1.31	0.39, 4.45
Place of birth (urban vs. rural)	1.14	0.58, 2.25
Model 3: Sexual history factors (n=628)		
Age at first intercourse (<16 vs. ≥ 16	1.56	0.65, 3.76
Ever used condom (yes vs. no)	0.51	0.24, 1.07
Exchanged sex for gifts (yes vs. no)	2.57	1.02, 6.53
Number of lifetime sex partners (> 2 vs. ≤ 2)	1.94	0.62, 6.13
Model 4: STI history factors (n=130))		
Treated for STI in past 12m (yes vs. no)	5.14	1.05, 25.02
Partner treated for STI in past 12m (yes vs. no)	1.15	0.16, 8.18
Genital ulcers or sores	0.7	0.05, 10.59
Dysuria	1.36	0.06, 28.89
Model 5: Current STI factors (n=594)		
HSV-2 (positive vs. negative)	0.87	0.33, 2.31
HIV (positive vs. negative)	0.95	0.26, 3.50
Model 6: Combined (n=183)		
Post secondary education (> secondary vs. ≤ secondary)	8.66	1.66, 45.21
Electricity	0.88	0.19, 4.22
Ever used condom (yes vs. no)	0.67	0.10, 4.31
Exchanged sex for gifts (yes vs. no)	1.47	0.33, 6.57
Treated for STI in past 12 m (yes vs. no)	2.85	0.91, 8.93

[a] *All models include age adjustment by 5 year categories*

history of forced sex; hence, the increased variance and widened confidence intervals. Men reporting forced sex tended to be below 18 years of age, have a higher level of education and report a history of transactional sex. A higher percent (21%) of the men reporting forced sex were aged less than 18 years as compared to those with no history of forced sex (7%). None of the men who reported forced sex had a history of anal sex which was reported only among 3% of those who had not experienced forced sex reported a positive history of anal sex. As was for the women, a history of transactional sex was found to be associated with a positive history of forced sex. Among men the prevalences of HIV and HSV-2 were not different among men with and without a history of forced sex.

In the sociodemographic model, men who had higher than secondary school level education had 3-times the odds of reporting forced sex than men with a lower level of education (Table 4). Transactional sex remained significantly associated with forced sex after adjustment for other factors in the sexual history model. In the STI history model, previous treatment for STI in the past 12 months was found to associated with forced sex, although the confidence interval was very wide (OR 5.14 95% 1.05, 25.02). Neither HSV-2 nor HIV serostatus was found to be significantly associated with

Table 5: Distribution of forced sex by perpetrator and by gender in the ART impact cross-sectional study, in Kisumu, Kenya

Perpetrator	Females, n = 106	Males, n = 29
Relative living in the same house	8 (7.5%)	1 (3.4%)
Relative living in the same house	9 (7.5%)	3 (10.3%)
Neighbor	15 (14.2%)	4 (13.8%)
Friend	16 (15.1%)	10 (34.5%)
Husband	27 (25.5%)	0
Partner/boyfriend/girlfriend/fiancée	10 (9.4%)	8 (27.6%)
Somebody with authority in the community	4 (3.8%)	0
Somebody known to you (but none of the above)	13 (12.3%)	6 (20.7%)
Stranger	11 (10.4%)	0
Other	1 (0.94%)	1 (3.4%)

a history of forced sex. In the overall model that fit variables with p-values less than 0.1, only having a higher level of education was found to be associated with forced sex; however, the confidence interval was wide, suggesting a lack of precision in the measure (OR 8.66 95% CI 1.66, 45.21).

Other findings

Data on the perpetrator of the forced sex act(s) were available for 106 of the 109 women reporting a history of forced sex (Table 5). Most of the perpetrators were reported to be intimate partners; 50% of the females reported forced sex by their friends or partners. Among the 29 cases of men reporting forced sex, 62.1% of them reported that the perpetrator was a partner or friend. None of the men reported forced sex by a stranger, as compared to 10% of the women who reported having forced sex. None of the men had reported the cases to authorities, whereas 15% of the women had done so. No factors were found to be significantly associated with reporting of forced sex to authorities. Similarly, a small percentage of women (20%) sought any medical care after forced sex and only two men (7%) reported having sought medical attention.

Discussion

In this cross-sectional study among women and men aged 15 and 49 in Kisumu, Kenya, women (13%) and men (4.5%) reported a history of forced sex which was associated with a higher level of education, high economic status, history of transactional sex and more than two sexual partners among women and having a higher level of education among men.

The prevalence of forced sex among women was low in comparison to prevalences reported elsewhere in the region. However, the true prevalence of forced sex is likely to be even higher, because our question on forced sex did not make a distinction between rape by a stranger and that by an intimate partner [14]. As anticipated, a majority of the women reported that the perpetrators of forced sex were their intimate partners or someone known to them; strangers accounted for only 10% of the perpetrators. Similarly, a majority of the men reported friends and partners as the perpetrators: while, we did not ascertain the gender of the perpetrators none of the men with a history of forced sex reported ever having engaged in anal sex.

Among the participants of this survey, forced sex is influenced by both individual and societal level factors related to gender inequality and socioeconomic vulnerability. The reported relationship between poverty and forced sex is a complex one. In our study, a higher level of education and economic status were both found to be correlated with forced sex among women. Borrowing from the World Health Organization report on violence, a tenable explanation for this finding is that greater empowerment brings with it more resistance from women to patriarchal norms, so that men resort to violence in an attempt to regain control [1 15]. In Zimbabwe, for example, women's lack of economic security and opportunity creates dependencies that make women unable to exercise choice within their sexual relationships. Findings from Watts et al. suggest that women who feel that they have the right to choose not to have sex are most at risk of forced sex (and potentially physical violence) [16]. However, our findings appear to contradict other reports that less empowered (socioeconomic and education) women are at increased risk of physical and sexual violence [17 18]. It is probable that the relationship between sexual violence and empowerment is similar to that between physical violence and empowerment, is an inverted U-shape- whereas greater empowerment confers greater risk up to a certain level, beyond which it starts to become protective [19 20]. However, we did not

define how the woman's material wealth was acquired (e.g., through transactional sex or otherwise) and whether it is co-owned or owned by the woman herself as these are other factors that could possibly influence the sexual relationship. It is also possible that electricity in the home is not a good proxy measure of economic status in Kenya.

Adjusting for level of education and economic status, forced sex was found to be associated with risky sexual behavior, specifically transactional sex and a higher lifetime number of sexual partners, findings consistent with other studies. For example, Kalichman and others' study in Cape Town, South Africa found that women with a history of sexual assault were among others, significantly more likely to: have exchanged sex to meet survival needs, have multiple male sexual partners and have higher rates of unprotected sex [21]. Although we are unable to establish causality due to the cross-sectional nature of our study, it could be that sexual assault, especially that occurring during childhood, led to risky sexual behavior [22]. Alternatively, it is also plausible that due to poverty, women are forced to engage in sex work or more subtle forms of transactional sex, which put them at risk for forced sex [13 14].

A history of drug use, mainly cannabis, khat (miraa) and kuber, was found to be associated with forced sex, a finding consistent with that in other studies [23 24] . However, it is not possible from our study to determine if the forced sex reported in this study occurred while the participants were using drugs. The causal relationship between drug use and sexual violence is not yet fully understood; however, some theories have been explored. Women who use drugs are likely to have partners who also use drugs [25], and are more at risk of being sexually victimized, reflecting the tendency for drug-using men to victimize their partners [26]. Because drug dependent women are disinhibited, they may find themselves in high risk situations or may be viewed by their partners as "sexually promiscuous", making their partners feel justified in perpetrating violence against them [27]. Another plausible explanation for this association is that victims of sexual violence are likely to engage in substance abuse as a coping mechanism to help them get over the trauma [28].

Contrary to our hypothesis HIV seropositivity among women was found to have a negative association with forced sex, but this relationship did not hold after adjusting for confounding variables. Intimate partner violence, including sexual violence and gender inequity have been demonstrated independently as risk factors for HIV infection [29]. Conceptually, several pathways explain this relationship, including the fact that women can be exposed to HIV through genital trauma in the course of rape by HIV infected men. In addition, women who have experienced sexual assault tend to have more HIV risk behaviors [30].

In keeping with other findings, there were low rates of reporting of forced sex to relevant authorities by both men and women [31]. Commonly cited barriers to reporting sexual assault to authorities among both women and men include shame, guilt, embarrassment, concerns about confidentiality and fear of not being believed [31]. Furthermore, limited physical access to relevant authorities such as the police, and fear of the legal processes, including experiencing rudeness and poor treatment by the police may also reduce reporting rates. These reasons can be extrapolated to explain the low reporting rates of sexual violence incidences across both genders.

Our findings should be interpreted with the following limitations since it was cross-sectional and therefore, it is not possible to make "causal inferences" on the relationships between risk factors and forced sex. Another important limitation is that participants responded to the question on whether they had 'ever' had forced sex whilst the predictor variables assessed the participants' current situation. It is possible that their past history of forced sex is unrelated to their current circumstances. In addition, self-reported data, as collected in our study through face-to-face interviews are prone to bias due to under or over reporting. Participants seek to give socially desirable responses, whether or not they are true, especially if they are concerned about stigma or retaliation. Furthermore, collection of data on sexual behavior has several methodological challenges, including problems of recall, ambiguous terminology and the sensitive nature of sexual information [32]. This could account for an overall underestimation of the results in our study, particularly among men, due to an attempt to conform to the sociocultural norms of this region. Data from self-completed questionnaires have been demonstrated to have better validity when compared to face-to-face interviews, as the former reduces the social desirability bias [33]. However, self-completed questionnaires have the disadvantage of lower response rates and missing data, especially in the setting of low literacy. Perhaps assisted self-completed questionnaire (ASCQ) may yield better results and would be worth exploring in future studies. Finally, although our sample was large and appeared to represent the local population, participants were drawn from a single geographical location, generalizability outside of Kisumu is limited.

In conclusion, however, and importantly, forced sex is not uncommon and is related to a higher socioeconomic status, higher education level, transactional sex, and multiple sexual partners among women. Among men forced sex was found to be uncommon and related to having a higher level of education. Accordingly, programs need to be established that aim at prevention of forced sex by addressing the underlying potential risk factors. Because of the high rate of forced sex perpetrated by intimate partners among both men and women reporting forced sex, there is a need for sexual violence prevention programs to educate the public about intimate partner sexual abuse.

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